ENVIRONMENTAL ASSESSMENT
ENVIRONMENTAL QUALITY IMPROVEMENT PROGRAM
IRRIGATED CROPLAND OF THE SOUTHWEST CLOSED BASINS
GEOGRAPHIC PRIORITY AREA
2001

INTRODUCTION

This environmental assessment (EA) is being prepared by the United States Department of Agriculture Natural Resources Conservation Service to comply with the requirements of the National Environmental Policy Act of 1969 and implementing regulations at 40 CFR Parts 1500 – 1508. The EA will assist NRCS in determining whether the proposed action will have a significant impact on the quality of the human environment and therefore requires preparation of an Environmental Impact Statement.

NEED FOR PROPOSED ACTION:

Purpose of and Need for Action:

The purpose of and need for the Irrigated Cropland of the Southwest Closed Basins Geographic Priority Area, referred to in this document as GPA, is to reduce the long term decline in the water table within the aquifers to ensure an adequate long-term supply of high quality water for irrigated agriculture and urban uses.

Background:

Within the GPA, groundwater is the sole source of water for the approximately 77,104 acres of cropland and the 25,000 (1) residents living within the area. In parts of the GPA, much of the private non-cropland has been subdivided and is being developed at an increasing rate. As a result, additional domestic wells are being drilled with increasing demand on the aquifer for domestic use. Irrigated agriculture is estimated to use approximately 90 percent of the water pumped from the aquifers.

At this time the crops being grown within the GPA include chile, onions, corn silage, small grains, cotton, alfalfa, pecans, other truck crops. In general these are shallow rooted crops which are difficult to irrigate efficiently using traditional systems. The exception to this would be pecans, alfalfa, and cotton, which are deep-rooted crops.

The variability of soil intake rates, and slopes are other conditions that make it difficult to irrigate efficiently using traditional methods.

Evidence that there is a problem with a declining water table is contained in reports by the New Mexico State Engineer Office (SEO)(3)(4). The long-term decline varies within the GPA from 8 feet to 83 feet since large-scale irrigation began in the GPA and the SEO began monitoring selected wells. Of the eight selected wells, only one showed a decline followed by a rise in the water level and it appears that the rise occurred after large scale irrigated agricultural use was reduced in the area of that well.

Problems associated with the decline include increased pumping costs and reduced transmission rates in the aquifer for agricultural production and urban, industrial and domestic uses. This has led to concern by virtually all segments of the population within the GPA about the long-term availability of water for all users (5).

ALTERNATIVES:

Alternative 1: No Action

Alternative 2: Proposed Action

Use NRCS Environmental Quality Incentives Program (EQIP) authorities to assist farmers within the GPA to apply water conservation measures. These measures could include improvements to, or changes in irrigation systems being used. Associated practices and systems could include irrigation pipelines and appurtenances, concrete ditch lining and appurtenances, irrigation land leveling, irrigation water management, surface and subsurface irrigation systems, trickle irrigation systems, and low energy precision application (LEPA) sprinkler irrigation systems with emphasis on trickle and LEPA systems. With these systems, irrigation efficiencies of 85%+ can be expected. Other practices that will probably be utilized in association with the above noted systems could include residue management (mulch till), residue management (seasonal), nutrient management, pest management, conservation buffers and upland wildlife habitat management.

SCOPING OF ISSUES FOR UNIQUE AND PROTECTED RESOURCES IN THE AREA:

Cultural Resources and Historic Properties:

The NRCS Cultural Resource Specialist has conducted a record search for all areas considered for treatment within the GPA. The result of the search was that there are many sites of cultural significance within the GPA. Therefore, all practices that are considered undertakings under the programmatic agreement between the New Mexico State Historic Preservation Officer (SHPO) and NRCS will be surveyed for cultural resources prior to installation of practices which will utilize funds through the EQIP. This will include a site specific records check as well as an on-site cultural resource survey and Section 106 Consultation with SHPO.

Threatened and Endangered Species and Species of Concern:

A search of the New Mexico Game and Fish Department's Biota Information System of New Mexico (BISON) (6)(7) lists for Dona Ana and Luna Counties and USFWS' data base was conducted. NRCS has determined that, while there are twelve species listed, the alternatives evaluated will not affect any of the species listed except possibly two, the northern aplomado falcon, and the reticulate Gila monster. The U. S. Fish and Wildlife Service will be consulted on a case by case basis if it is determined by NRCS that actions proposed as part of individual contacts will have a potential effect on species of concern.

Wetlands:

The alternatives listed will not affect any natural wetlands. Irrigation induced wetlands may exist and may be affected by actions within the proposed alternative. Because these are isolated wetlands and not connected to navigable waters, no permits are required even to implement actions that affect these wetlands. Food Security Act requirements will be followed if potential wetlands are encountered.

IMPACTS AND EFFECTS OF PROPOSED ALTERNATIVE:

Alternative 1: No Action:

There will be some implementation of the practices described under the proposed alternative if EQIP funds are not utilized within the GPA. It is impossible to determine with any accuracy the extents of the practices that will be installed. It is certain that the impact on reducing the rate of decline of the water table will be less than that expected under the proposed alternative.

The traditional method of irrigation is surface flood application of water. Efficiencies using this method of irrigation are generally 30 to 50 percent and as low as 15 percent in some cases (2). Consumptive use of water by crops in the GPA averages 69.3 inches/acre using traditional irrigation systems.

Alternative 2: Proposed Action:

It is estimated that about 8,000 of the 77,000 acres of irrigated cropland has already had highly efficient irrigation systems (trickle and LEPA sprinkler systems) installed. Of the remaining 69,000 acres, it is estimated that 5,000 acres will be converted to highly efficient system by use of EQIP funds over the next 4 years at a program cost of $250,000 per year. This dollar amount has been the maximum allocation per GPA in New Mexico since the inception of EQIP. This cost-share assistance will encourage participants to convert additional acreage at their own expense.

Consumptive use of water by crops in the GPA averages 24.5 inches/acre using LEPA or trickle irrigation systems which will be emphasized in the GPA. The efficiencies of these systems are expected to be about 85%.

Systems anticipated to be used require the application of various combinations of individual practices to achieve the desired result of irrigation water conservation. Specific components of each of the systems proposed will have the following effects (8). Items 1 through 7 will directly affect the primary resource concern of water quantity. Items 8 through 14 will impact the secondary resource concerns noted above:

1. Irrigation Pipeline: A pipeline and appurtenances installed in an irrigation system. This will be installed by excavating a trench, installing the pipe and refilling the trench back to approximately the original grade.

- **Short Term Effects**: The only effects expected are an increase in dust and noise generated during installation.
- **Long Term Effects**: Water usage will be reduced due to decreased seepage and evaporation losses.

2. Concrete Ditch Lining: This is a fixed lining of impervious material installed in an existing or newly constructed irrigation field ditch, irrigation canal, or lateral. This will be installed by lining an open ditch with concrete to deliver irrigation water to the fields. In some cases an earthen berm will be built above the field level and then the concrete ditch is poured.

- **Short Term Effects**: The only effects expected are an increase in dust and noise generated during installation.
- **Long Term Effects**: Water usage will be reduced due to decreased seepage losses.

3. Irrigation Land Leveling: This involves reshaping the surface of the land to be irrigated to a planned grade. The land will be leveled to a grade that will allow the most efficient application of irrigation water within practical economic and physical limits.

- **Short Term Effects**: Effects expected are an increase in dust and noise generated during practice application, reduced soil productivity due to exposure of subsoil and compaction due to repeated traffic needed to install the practice.
- **Long Term Effects**: Irrigation efficiencies will be improved by up to 30 percent, which correlates directly to the amount of water saved as a result. Crop productivity will increase due to more uniform application of irrigation water.

4. Surface and Subsurface Irrigation Systems: A planned irrigation system in which all necessary water control structures have been installed for the efficient distribution of irrigation water by surface means such as furrows, borders, contour levees, contour ditches, or by subsurface means, or open ditches. The efficiency of water application is directly related to how the field has been leveled. Short and long term effects have been noted above.

- **Short Term Effects:** None
- **Long Term Effects:** As components of the system are improved, the efficiency of the system will improve and will have a positive effect on the rate of change in the water table.

5. Trickle Irrigation Systems: A planned irrigation system in which all necessary water control structures are installed for efficiently applying water directly to the root zone of plants by means of applicators (orifices, emitters, porous tubing, perforated pipe operated under low pressure. The applicators can be place on or below the surface of the ground. Water is supplied to the tape or tubing through a system of pipelines and valves.

- **Short Term Effects**: These are basically the same as those noted above for irrigation pipelines. Other short-term effects are the cost of installation, which is equal to or exceeds the cost of the land, and the need to adapt to a cultural change in farming practices.
- **Long Term Effects**: Irrigation efficiencies will be improved by up to 75 percent, which correlates directly to the amount of water saved as a result. Additional long-term effects include increased crop productivity, improved soil quality, reduced nutrient and pesticide application, reduced energy requirements, and reduced labor.

6. LEPA Sprinkler Irrigation Systems: These systems apply water through an irrigation pipeline to a self moving linear or circular system that applies water at or near the soil surface through drag socks on the soil surface or bubblers with heights of 8 to 18 inches above the soil surface.

- **Short Term Effects**: These are basically the same as those noted above for irrigation pipelines. Other short-term effects are the cost of installation, which is equal to or exceeds the cost of the land, and the need to adapt to a cultural change in farming practices.

- **Long Term Effects**: Irrigation efficiencies will be improved by up to 45 percent, which correlates directly to the amount of water saved as a result. Additional long-term effects include, reduced nutrient and pesticide application, reduced energy requirements, and reduced labor.

7. Irrigation Water Management: This involves determining and controlling the rate, amount, and timing of irrigation water application in a planned and efficient manner.

- **Short Term Effects:** This will result in the proper amount of water needed for crop production and soil management during each growing season.
- **Long Term Effects:** This will result in the most efficient use of water possible dependent on the type of irrigation system being used. As irrigation efficiencies improve, the aquifer should respond with a rising water level, or a reduced rate of decline.

8. Conservation Crop Rotation: This involves growing crops in a recurring sequence on the same field.

- **Short Term Effects:** None
- **Long Term Effects:** Soil organic matter will be maintained or improved. Plant nutrients, and manage plant pests such as weeds, insects, and diseases can be managed to some degree by use of this practice.

9. Residue Management (Mulch Till): This involves managing the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting.

- **Short Term Effects:** None
- **Long Term Effects:** Wind erosion will be reduced, soil organic matter will be maintained or increased, and tilth will be improved.

10. Residue Management (Seasonal): This involves managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during part of the year, while growing crops in a clean tilled seedbed.

- **Short Term Effects:** None
- **Long Term Effects:** Wind erosion will be reduced, soil tilth may improve somewhat.

11. Nutrient Management: This involves managing the amount, form, placement, and timing of applications of plant nutrients.

- **Short Term Effects:** This will improve crop production while preventing the excess application of plant nutrients
- **Long Term Effects:** The potential for build up of excess plant nutrients in the soils will be reduced. This will also reduce the potential for ground water pollution due to nutrient application.

12. Pest Management: This involves managing agricultural pest infestations (including weeds, insects, and diseases) to reduce adverse effects on plant growth, crop production, and environmental resources.

- **Short Term Effects:** This will improve crop production while preventing the excess application of pesticides.

- **Long Term Effects:** The potential for build up of excess pesticides in the environment will be reduced. This will also reduce the potential for ground water pollution due to pesticide use.

13. Conservation Buffers: This involves planting strips of vegetation at specified locations to provide protection from wind erosion, and its effect on crops. Included are crosswind trap strips, herbaceous wind barriers, and field windbreaks. Define each.

- **Short Term Effects:** None
- **Long Term Effects:** Reduced damage from wind erosion, and improved wildlife habitat diversity.

14. Upland Wildlife Habitat Management: This will consist of adding semi-permanent water, and additional cover and roosting habitat. Species such as Gambel's and scaled quail, mourning and white wing doves, and various raptors and neotropical migratory birds will benefit. This will be primarily associated with the use of conservation buffers, and irrigation system installation and operation.

- **Short Term Effects:** None
- **Long Term Effects:** Increased populations of the target species as well as survivability of the young of the species nesting in the GPA should be observed.

Land uses will not change significantly as a result of the implementation of Alternative 2 since the GPA involves closed water basins in which no additional agricultural irrigation water rights are issued by the SEO.

Comparison of Alternatives:

Effects on Needs

Alternative	Irrigation Efficiency (%)	Water Use (in/ac)	Water Saved (in/ac)	Program Cost ($/ac)	Total Cost ($/ac)
1, No Action	30	69.3 avg.	0	0	0
2. Proposed Action	85	24.5 avg.	44.8 avg.	$400 avg.	$1200 avg.

Persons and Agencies Consulted:

The proposal for this GPA was reviewed by and concurred in by the following:

Richard Holdridge, Chairman
Deming SWCD
Deming, NM

Harvey Morrow, Vice-chairman
Caballo SWCD
Truth or Consequences, NM

Robert Rogers
NM State Engineer Office
Deming, NM

John Burris, CED
USDA – Farm Service Agency
Deming, NM

Kate Maynard, Field Representative
NM Department of Agriculture
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Gilbert Garcia, CED
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Richard Phillip, Director
NMSU Chile Task Force
Las Cruces, NM

Martin K. Sweetser, Chairman
Luna Co. Committee
USDA – Farm Service Agency
Deming, NM

Phil Hibner, County Agent
NMSU Cooperative Extension Service
Deming, NM

Albert Lyon, County Agent
NMSU Cooperative Extension Service
Truth or Consequences, NM

Edmund Ogaz, Chairman
Dona Ana County Committee
USDA – Farm Service Agency
Las Cruces, NM

References:

FINDING OF NO SIGNIFICANT IMPACT
FOR THE IMPLEMENTATION OF THE EQIP
IRRIGATED CROPLAND OF THE SOUTHWEST CLOSED BASINS GPA

INTRODUCTION:

The Irrigated Cropland of the Southwest Closed Basins GPA is a federally assisted action under the Environmental Quality Incentives Program (EQIP), with assistance from the Natural Resources Conservation Service (NRCS). An environmental assessment was undertaken in connection with the development of this proposed action. This assessment was conducted in consultation with local, state, and federal agencies. Data developed during the assessment are available, upon request, from:

US Department of Agriculture
Natural Resources Conservation Service
Deming Field Office
405 E. Florida
Deming, NM 88030

The Environmental Assessment (EA) is attached for reference.

DETERMINATION OF SIGNIFICANCE

Table 1

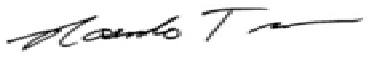
CONTEXT	*INTENSITY*	*REASONS FOR NON-SIGNIFICANCE*
Irrigated land treated - 3% of the cropland will be converted to trickle or LEPA systems with EQIP assistance	Avg. of 7467 ac-ft of water will be saved annually on acreage treated under this GPA	Only 7467 ac-ft (2%) of the total average consumptive use of water (386,925 ac-ft) will be saved, on only 3% of the acreage not currently utilizing trickle or LEPA systems in the GPA
Risk -Trickle and LEPA systems will be installed utilizing EQIP funds on only 3% of the cropland in the GPA under current funding limits.	The average contract will involve 100 acres and installation of trickle or LEPA systems will cost from $500 to $1200/ac, or 50 to 120% of the cost of the land. This will be a permanent change.	Economic risks will be assumed by participants applying trickle or LEPA systems applied through EQIP on only 20 of the tracts in the GPA
Precedence - Utilizing EQIP funds may cause more producers to try this technology; the result should be a greater acceptance of these systems on additional land	Any additional systems will be a permanent high cost change.	The limited availability of EQIP funds (250,000 per year per GPA) will limit the amount of assistance through this program to install trickle and LEPA irrigation systems which cost approximately $1200 per acre and are typically 100 to 200 acres in size ($120,000 to $240,000 each)

Other considerations related to context and intensity are discussed as follows:

Currently there are no water quality problems that would affect public health or safety that are associated with irrigated agriculture in the GPA. Water from the aquifers is of high quality. Implementation of these systems will not affect the quality of the ground water and will limit the potential for future problems. Effects on public health or safety related to this action are not significant. The land that will be impacted by this action is all irrigated cropland, which is all very similar throughout the area. There will not be significant effects on any unique character of the area. There is no anticipated controversy in connection with this proposed action. Controversy is not a significant concern. Some land users have installed improved systems without financial assistance and will probably continue to do so. The implementation of systems with EQIP assistance will allow additional producers to begin using this technology and encourage faster adoption of these systems. However, due to the high cost of the systems, it is anticipated that the cumulative impacts of this action will not be significant. While there are significant cultural resources in the area, the implementation of this action will not result in disturbance to known sites. Acreage where these systems will be implemented will have on-site cultural resource surveys done prior to implementation. Therefore the impact on these resources will not be significant. There is no anticipated effect on endangered species or critical habitat. Impact on endangered species or critical habitat is not significant. No known laws will be violated as a result of this action. Therefore, this is not a significant concern.

Finding of No Significant Impact:

This finding is based on the evidence presented in the environmental assessment of impacts and alternatives for this geographic priority area. Based on the assessment and the reasons given in table one , I find that the alternatives analyzed in the EA will not have significant impacts on the quality of the human environment. Therefore, an environmental impact statement will not be prepared.



ROSENDO TREVINO
State Conservationist

December 20, 2001
Date